

CLAIMS:

1. A system for diagnosing an aircraft component or component assembly for maintenance and repair purposes, said system comprising:

(a) means positioned in or on said aircraft for monitoring an aircraft component and for providing status information signals regarding the status of said aircraft component,

(b) first means for transmitting said status information signals and first means for receiving interrogation signals,

(c) means for processing including second means for transmitting said interrogation signals and second means for receiving said status information signals for processing to provide maintenance and repair information, and

(d) means for displaying said maintenance and repair information.

2. The system of claim 1, wherein said means for monitoring comprises means for preliminary processing of said status information signals to provide transmittable signals to said first means for transmitting in response to said interrogation signals from said second means for transmitting.

3. The system of claim 1, wherein said means for monitoring comprises its own means for operating independently of any aircraft power source.

4. The system of claim 1, wherein said means for monitoring and said means for processing are separate, wherein said first means for transmitting and first means for receiving are part of said separate means for monitoring, and wherein said second means for transmitting and said second means for receiving are part of said separate means for processing.

5. The system of claim 4, wherein said first and second means for transmitting and receiving are respectively wireless transmitters and wireless receivers.

6. The system of claim 4, wherein said first and second means for transmitting and receiving are respectively infrared transmitters and infrared receivers.

7. The system of claim 1, wherein said means for processing comprises means for determining, on the basis of said status information signals, the presence or absence of a fault in said aircraft component, said means including rated reference information.

8. The system of claim 1, wherein said means for monitoring comprises means for storing said status information signals sensed during flight for evaluation by said means for processing on the ground.

9. The system of claim 1, wherein said means for processing comprises means for storing therein rated maintenance and repair reference information for evaluating said status information signals with reference to said rated maintenance and repair reference information.

10. The system of claim 1, wherein said means for display displays said maintenance and repair information and for pinpointing any particular aircraft component to be diagnosed.

11. The system of claim 1, wherein said means for processing and said means for displaying together form a handset.

12. The system of claim 1, wherein said means for monitoring is positioned for sensing wear and tear of a wing flap actuator and for providing a respective actuator status information signal.

13. The system of claim 1, wherein said means for monitoring is positioned in a bottom area of a hydraulic container in said aircraft for sensing a quality of a hydraulic fluid in said hydraulic container.

14. The system of claim 1, wherein said means for monitoring is positioned in an aircraft fuel tank in an area of a water drainage valve for sensing a water concentration or content in said fuel tank.

15. The system of claim 1, further comprising means for linking transmission between said means for monitoring and said means for processing.

16. A method for diagnosing an aircraft component or component assembly for maintenance and repair purposes, said method comprising:

- (a) a step of sensing in or on said aircraft an operational status of at least one aircraft component for providing component status information signals relevant to said at least one aircraft component,
- (b) transmitting an interrogation signal to request said component status information signals generated in said sensing (a),
- (c) transmitting said status information signals to a signal processing unit for processing to provide maintenance and repair information, and
- (d) displaying said maintenance and repair information on a display screen.

17. The method of claim 16, further comprising preliminarily processing said status information signals in a signal processing module in a sensor unit for data reduction and for producing intermediate signals that represent said status information signals.

18. The method of claim 16, comprising performing said transmitting in a wireless manner.

19. The method of claim 16, comprising storing in a memory of said signal processing unit rated maintenance and repair reference information, and evaluating said status information signals with reference to said rated maintenance and repair reference information.

20. The method of claim 16, further comprising storing said status information signals in a memory prior to said processing.

21. The method of claim 20, further comprising performing said sensing and storing during flight and then performing said transmitting, processing, evaluating, and displaying while said aircraft is on the ground.